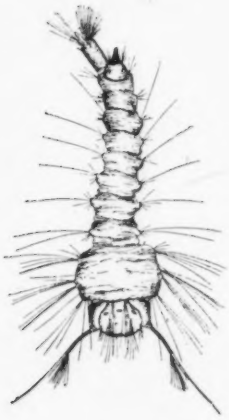
JULY, 1909.

ENTOMOLOGICAL NEWS

Vol. XX. No. 7.



Larva of Culex perturbans as described by Dr. John B. Smith.

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Described in "ENTOMOLOGICAL NEWS," page 177, Vol. XV

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HERMAN H. BREHME

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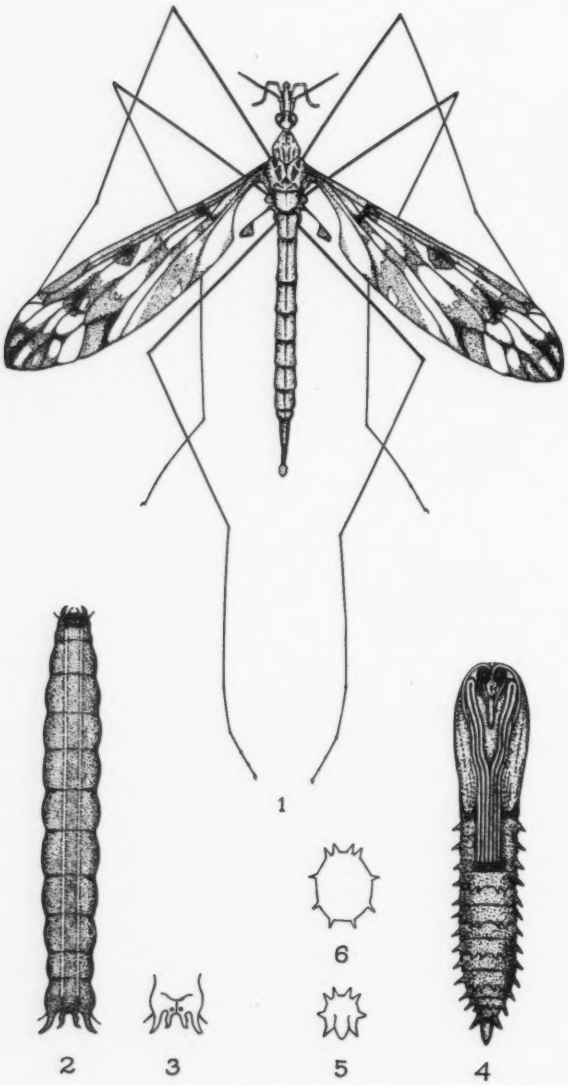
Desiderata of North American Carabidæ

81a, 87a, 106*, 07*, 08, 09, 11, 13*, 15, 17*, 19a, 23a, 23b, 26, 31, 41, 44, 47, 48*, 51*, 54, 58, 61, 62, 63, 66*, 68*, 70*, 71, 75, 80*, 81, 82, 85*, 86*, 87*, 89*, 90, 96, 202, 03, 04, 09, 16*, 23, 29, 36, 38, 45, 46*, 47*, 49*, 50*, 52, 53, 56, 57, 60*, 63, 68, 70*, 72*, 76, 77*, 78, 79, 81, 82*, 91, 93*, 94*, 98, 99*, 301*, 03, 07a, 09*, 10*, 12, 23*, 28, 34*, 35, 36, 38*, 46, 50, 52a, 53, 54, 55*, 62, 63*, 68, 69, 76*, 77, 78*, 82*, 83*, 85*, 90, 93, 98, 99, 400*, 06, 09, 10*, 11, 18*, 19*, 22, 24, 25, 28, 29*, 30, 32, 36*, 37, 38*, 39, 42*, 43, 44*, 46, 47*, 51, 58, 60, 64, 69*, 74*, 77, 78, 79*, 80*, 88*, 89*, 90, 91, 93.

Offerata, rare species of North American Coleoptera. *Lack full set.

THE SNOW COLLECTIONS, University of Kansas, Lawrence.



GREENE ON TIPULA TRIVITTATA SAY.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XX. JULY, 1909. No. 7.

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Description of Larva and Pupa of Tipula trivittata Say.

BY CHAS. T. GREENE, Philadelphia, Pa.

(Plate XII)

While collecting in a stump of oak at Glenside, Pa., March 30, 1908, I found two dipterous larvae about an inch or two beneath the bark, where the decayed wood was soft and damp.

The larva, Fig. 2, was about 32 mm. long when fully extended and translucent, yellowish brown in color and with two longitudinal white stripes on the dorsal side. The head, mandibles and antennae were black.

By carefully watching the larva I made the following observations: It moved by expanding and contracting the body and propelling itself by the ventral side of the last segment. The last segment had four appendages, the two larger ones being slightly above the smaller pair, but as the larva moved it kept all four entirely free from the surface on which it moved.

Fig. 3 is a ventral view of the last segment.

The larva pupated between April 15-17, 1908 in the decayed wood.

The pupa, Fig. 4, is 22 mm. long, chestnut-brown in color, being lighter towards the anterior end.

Fig. 4 is the ventral view of the pupa and the location of the two pairs of spurs. Fig. 5 is a view looking at the posterior end of the pupa. Fig. 6 is a section taken just below the centre of the pupa and gives the position of the spurlike appendages around the pupa-case.

After lying in the pupa state until April 25, 1908, the pupa worked its way to the surface during the night and about half its length protruded.

The next morning (April 26, 1908) the imago appeared.

The other larva found with this one described was slightly smaller and black from the head to a little above the middle of the body. Otherwise like the above. These are the two specimens mentioned in ENT. NEWS—Vol. xx, page 134.

Descriptions of New Hymenoptera.

BY H. L. VIERECK.

Helorimorpha fisheri n. sp.

♀.—Compared with the description of *melanderi** this species differs as follows: Head including the scape concolorous with the thorax excepting the space between the ocelli and the border around the latter and the eyes, all of which are more or less black, pedicel brownish, flagel black, ocelli not bordered by a raised line, maxillary palpi five-jointed; thorax more or less reticulated all over, tips of posterior tibae and their tarsi dark-brownish, wings smoky, the stigma and veins concolorous dark-brown, almost blackish; the transverse median vein of the front wings failing to join the sub-median vein on account of a hyaline streak, the latter vein near its middle with a brown streak perpendicular to it and extending to the posterior margin of the wing; apical half of abdominal petiole parallel sided and inserted into the second dorsal abdominal segment into what seems to be a quadrate socket, the petiole apparently perfectly smooth and polished above.

♂.—Essentially the same as the ♀, but lacking the brown streak in the anal cell.

Type No. 12283 U. S. National Museum.

Type locality Plummer's Island, Md., August 18, 1907, col-

* 1908 ENT. NEWS, XIX, pp. 363 and 364.

lected by A. K. Fisher, July 7, 1907 collected by W. L. McAtee. Two paratopotypes collected by W. L. McAtee and D. H. Clemens, August 24, 1907, June 13, 1905, respectively. Two paratypes collected by N. Banks at Great Falls, Va., June 27 and Falls Church, Va.

Pimpla (Pimpla) erythropus n. sp.

Female, 10 mm.; male, 8.5 mm.; female, paratopotype, 12 mm., paratypes, 10.5 to 12.5 mm. Differs from *sanguinipes* in having a more or less smooth polished area occupying most of the posterior face of the metathorax, this space being bounded by a more or less distinct semicircular carina, the carina distinct at least laterally; membranous portion of male wings almost hyaline, the same portion of female wings distinctly brownish.

Type No. 12276, U. S. National Museum.

Type locality, Sommerdale, Calif. (Hopk. U. S. 4449E5, 4449E6, 4449E, 4449E3), (H. E. Burke), 1 ♀ paratopotype, 1 ♂ paratopotype.

Other localities, Los Angeles Co., Calif. (Aug. Keble 85E); Alameda Co., Calif., Sta. Monica, Calif., June 6, 1901 (C. E. Hutchinson), 3 ♀ paratypes 1 ♂ paratype.

Pimpla (Epiurus) bruneifrons n. sp.

Differs from *inquisitoriella* in the face of the male being brown beneath the antennae, in the reticulate pleural sides of the female propodeum and in both sexes having the longitudinal carinae of the metanotum more pronounced and more elevated buttress-like.

Type No. 12273, U. S. National Museum, 4 females and 3 males, all from the type locality.

Type locality, Summerdale, Calif. (Hopk. U. S. 4449i). Reared from *Netolophus oslari* (H. E. Burke).

Cryptus (Gambrus) burkei n. sp.

Transverse median vein in anterior wings inserted as in *Trychosis* female, 7 mm. Differs from *nuncius* also as follows: Antennae 27-jointed, entirely black; coxae and first joint of trochanters of anterior legs entirely black, coxae and trochanters of middle and posterior legs entirely ferruginous, elevated lines of metathorax very indistinct, posterior femora and tibiae tipped with fuscous; their tarsi a kind of testaceous, infuscated toward tips; second dorsal abdominal segment with very indistinct punctures, first dorsal segment with the constricted

portion black, fourth and following dorsal segments black, ovipositor protruding beyond the tip of the abdomen to a distance equal to about one-half the length of the latter. Three female paratopotypes, one with fourth dorsal abdominal segment partly reddish laterally, a fourth female paratopotype about 4 mm. long. Male, 5 mm.; antennae 28-jointed; all coxae and first joint of trochanter of all legs black, the latter at least mostly so, second, third and fourth tarsal joints of hind legs pale, whitish, fifth dorsal abdominal segment black except at base, sixth and following dorsal segments also black; 2 male paratopotypes, one of which is about 3.5 mm. long, has the fifth and following dorsal abdominal segments black and the hind tarsi fuscous, except the third and fourth joints, which are partly pale.

Types No. 12282, U. S. National Museum.

Type locality, Summerdale, Calif., Hopk. U. S. 4430b2, 4430b, 4430b1.

Abies concolor (H. E. Burke, reared), Hopk. U. S. 4449h, 4449b, September 8, 1906, on tent (H. E. Burke).

Sphecodes (Sphecodes) macfarlandi n. sp.

Female.—9 mm. Differs from *lantus** apparently only as follows: Tegulae testaceous anteriorly, blackish posteriorly, dorsal abdominal segments with impunctate apical borders, red of abdomen very dark, blackish.

Type No. 12276 U. S. National Museum.

Type locality, Nelson, New Hampshire, one specimen (collected by Prof. Joseph McFarland).

I HAVE RECENTLY been making some exchanges in Lepidoptera with American correspondents and have just had a trying experience. I sent a couple of boxes of insects to a friend by post, but the postal authorities refused to deliver unless *duty* was paid, and this was not unnaturally declined, and in the end the parcel having been opened was returned to me, on which I had to pay a re-direction fee amounting to more than the original postage. But the evil of it all lies in the fact that it was most carelessly packed and that in a large box of butterflies there is not a single specimen undamaged, nearly all of them being completely smashed. They were rare exotic butterflies, many from remote parts, most difficult to obtain. Is there no remedy to be obtained in a case like this? Yours faithfully, G. T. BETHUNE-BAKER, Edgbaston, England.

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*As described by Lovell, 1907 Psyche (101-104).

A Case of Replacement of Color in Papilio ajax Linn.

WILLIAM W. NEWCOMB, M. D., Detroit, Mich.

An interesting example of replacement of color occurred in the course of an experiment to determine the effect, if any, of different colors upon the growing larvae and the chrysalids of *Papilio ajax*. One of the latter, instead of producing the usual summer form of the species (*marcellus*) with the vivid crimson markings, disclosed an imago in which these were all replaced by yellow. The difference is very striking especially when a specimen of the normal form and the one under consideration are directly compared, the crimson stripe and the two spots of the crimson bar of the under surface of the hind wing of the one contrasting strongly with the yellow of the corresponding parts of the other; the antennal spot on the upper surface is only less conspicuous because of the single spot. This unique specimen is a male which emerged September 3, 1906.

It may be worth while to note the conditions under which the replacement occurred. I was engaged in rearing a considerable number of larvae of *ajax* from eggs of imago, in each experiment subjected to the influence of the same color throughout their lives. Breeding boxes were used in which the inside in each case was entirely of the one color including the material to close the openings for the admittance of light and air. The specimen showing the replacement came from the box in which the lining color was maroon and was the only butterfly that emerged from this box in the summer or fall, all the others—some twenty-two in number—passing the winter in the chrysalis and hatching in the spring without any change from the normal in regard to the crimson color.

Why should a single specimen have shown this variation of color, notwithstanding the fact that all the larvæ and chrysalids were kept under the very same conditions? Unfortunately only one butterfly was disclosed in the fall of the year; the length of time in the chrysalis then, may perhaps be considered as a different factor, but it is, however, the only one. Had a second specimen showing the replacement emerged in

the fall, the influence of the particular color under which the larvæ and pupæ were raised would be very suggestive of the cause of the condition.

Folsom* in discussing the replacement of red by yellow in certain insects says, "These two colors in many butterflies and beetles are due to pigments that are closely related to each other chemically" and "Yellow in place of red then may be attributed to an arrested development of pigment in the living insect." Just what causes this arrest it seems is not very well known, but Folsom gives a hint in this sentence, "These changes of color are apparently of no use to the insect, being merely incidental effects of light, temperature or other inorganic influences." The light or color factor may therefore have more influence than appears at present and further experiments along this line should prove instructive one way or the other.

I believe that replacement of color in the Rhopalocera is of very rare occurrence. This is the only example I have ever seen out of many thousands of butterflies of my own and of others collecting. In the work referred to above, Folsom mentions only one species of butterfly by name, "*Vanessa* (*Pyrameis*) *atalanta*," in which replacement occurs.

Incidental Captures of Apterous and Orthopterous Insects at Plana, Texas.

By E. S. Tucker, Bureau of Entomology, U. S. Department of Agriculture.

A list of the orthopterous insects collected by myself while stationed at Plano, Collin County, Texas, from May to December, 1907, does not afford a proper indication of the number of species that might be expected to occur in the locality, since only incidental attention could be given towards collecting. However, as the common kinds were fairly represented in my collection, the species attract special interest

*Entomology: With Special Reference to its Biological and Economic Aspects, by Justus W. Folsom, pages 214-215.

from an economic standpoint, and are cited mainly on this account for the sake of the records in a locality which is typical of the black prairie lands of Northern Texas. The publication of new local records of any species, even should it be a common insect, contributes towards a better knowledge of distribution, and especially with reference to Texas, offers available data of definite captures for use in the prospective event of a general state list.

So far as was possible under the circumstances attending the study of the specimens, the specific determinations were made by myself; otherwise, the orthopterous insects were submitted to Mr. A. N. Caudell, of the U. S. National Museum, who kindly completed the work of identification. Special credit is given for the determination of the species of *Collembola.*

SUMMARY OF FAMILIES AND SPECIES, INCLUDING TWO VARIETIES.

Lepismidae.....	1	Mantidae.....	2	Blattidae.....	4
Sminthuridae...	1	Phasmidae.....	1	Locustidae.....	6
Forficulidae.....	1	Acridiidae.....	17	Gryllidae.....	7

Total number of forms reported, 40.

Order THYSANURA.

Family LEPISMIDAE.

Lepisma saccharina L.—August, occasionally in house, but also under shelter in yard.

Order COLLEMBOLA.

Family SMINTHURIDAE.

Sminthurus packardi Folsom.—July, in soil from corn field used for potting purposes; six specimens captured. Examples were determined by Dr. J. W. Folsom, the describer of the species. (See Psyche, Vol. VII, p. 385), who stated that the types came from Waco, Texas.

Order **EUPLEXOPTERA.**

Family FORFICULIDAE.

Labia minor L.—July to September, all at night taken at trap light.

Order **ORTHOPTERA.**

Family BLATTIDAE.

Thyrsocera cincta Burm.—July.

Ischnoptera inaequalis S. and Z.—June, in house; July; July, in house; July, at night detected with light of lantern on log; September; September, in house.

Ischnoptera uhleriana Sauss.—July; July, at night detected with light of lantern on log, and taken at trap light; November, in house.

Blattella germanica L.—May, nymph in house.

Family MANTIDAE.

Stagmomantis carolina L.—August and September, at night taken at trap light; September, at random.

Oligonyx scudderi Sauss.—September and October, all at night taken at trap light.

Family PHASMIDAE.

Diapheromera femorata Say.—June; July, August.

Family ACRIDIIDAE.

Tettix arenosus Burm.—May, at dusk in oat field.

Paratettix cucullatus Burm.—August.

Tettigidea lateralis Say.—August; October.

Tettigidea lateralis Say, var. *polymorpha* Burm.—August.

Syrbula admirabilis Uhl.—July, at night taken at trap light; August; October.

Orphulella picturata Scud.—September.

Boöpedon nubilum Say.—August.

Arphia luteola Scud.—August.

Chortophaga viridifasciata DeG.—July; July, in oat stubble; August.

Encoptolophus parvus Scud.—August; October; November.

Dissosteira carolina L.—November.

Schistocerca americana Dru.—July; August; August, at night taken at trap light; September, twilight; December, at night taken at trap light.

Campylacantha acutipennis Scud.—November.

Melanoplus differentialis Uhl.—November.

Melanoplus plebejus Stal.—November.

Melanoplus robustus Scud.—August; October; November.

Melanoplus scudderi Uhl., var. *texensis* Hart.—August.

Family LOCUSTIDAE.

Scudderia texensis S. and P.—October.

Amblycorypha uhleri Stahl.—July, twilight.

Orchelimum glaberrimum Burm.—August; October.

Xiphidium fasciatum DeG.—July, at night sweeping; October; November.

Xiphidium strictum Scud.—July to October. This species was frequently found during August to be preyed upon by a robber fly known as *Stenopogon longulus* Lw.

Ceuthophilus sallei Scud.—July, at night detected with light of lantern at rotten logs; August, October and November, under boards and rubbish.

Family GRYLLIDAE.

Ellipes minutas Scud.—August.

Nemobius cubensis Sauss.—August and September, at night taken at trap light.

Nemobius fasciatus DeG.—October.

Gryllus pennsylvanicus Burm.—August; September. The long-winged form was collected in August, at night taken at trap light, in addition to captures during daytime in August and September.

Oecanthus angustipennis Fitch.—August.

Oecanthus fasciatus Fitch.—July, at night sweeping; October, twilight.

Oecanthus nigricornis Wk., (*quadripunctatus* Beut.)—November.

Notes on Wood-Boring Coleoptera.

C. A. Frost, South Framingham, Mass.

In the April number of the News, p. 188, I noticed a brief reference to the penetrating powers of some species of Scolytidae which when pursued bored "into the heart of the tree so rapidly as to almost defy capture." This brought to mind some notes made several years ago from observations on another family of similar habits. I had found a species of *Hadrobregmus*, probably *carinatus*, boring into sticks of stovewood which were seasoning in the yard. The wood was neither very green nor well seasoned, and, I think, had been cut the previous winter. It was attacked on the split surfaces where they were uppermost.

As the rate of progress into the wood seemed rather slow, I selected a stick of white maple, one of hornbeam, and one of beech, on each of which a beetle was working, and laid them aside for observation at 3 P. M. (June 20th). At 7 P. M. no perceptible advance could be detected, all being sunk in the wood to the hind coxae. At 7 A. M. the next morning the one in the maple stick was in its entire length, while the one in the beech had the last segment of the abdomen protruding; the one in the hornbeam was not working. On June 22, at the end of forty-three hours, the one in the maple stick had bored into the wood one mm. more than the length of its body. Allowing for an extremely long specimen of this species the rate of progress for the forty-three hours was three and one-half mm. The one in the beech stick was in the exact length of its body, or five mm. The one in the hornbeam was dead. No post mortem examination was made but I have concluded that it died of exhaustion or disgust at the tough proposition that confronted it.

While the insect is at work the body is swung from side to side in a partial rotation and the cuttings come up in small lunate segments which are pushed back by the hind legs. At intervals the beetle backs partly out and pushes away the accumulated debris with the posterior tarsi.

This species was very abundant in the woodshed of the old farmhouse where I was spending my vacation and the timbers were fast assuming a serious condition of "powder-post" from their operations. The sticks of beech wood in the shed, which had evidently been piled up for several years in the back tiers, were almost reduced to powder in many cases. In the pine flooring of the attic some species of insect was also working and throwing up a very fine mealy dust into little piles, sometimes a quarter of an inch or more in height. These may have been the larvae of the same species as adult specimens were found in spider webs and on the windows of the attic.

In view of the great difference in the rate of progress between these specimens of *Hadrobregmus* and the unspecified Scolytid mentioned in the note referred to, I have concluded that they must represent the tortoise and the hare of the wood-boring Coleoptera.

I am wondering what becomes of the debris that the pursued Scolytid dislodges.

New Species of West Indian Cecidomyiidae.

By E. P. Felt, Albany, N. Y.

The following descriptions are based on material reared or collected and kindly submitted for study by Prof. H. A. Ballou, Government Entomologist of the British West Indies.

Asynapta mangiferae n. sp.

This species was reared from maggots found under the bark of small twigs of grafted mango, probably *Mangifera indica*. The presence of the larva is not indicated by an external swelling.

Male.—Length 1.5 mm.—Antennae as long as the body, sparsely haired, fuscous yellowish; 23 segments, the fifth with a stem three-quarters the length of the cylindric basal enlargement, which latter has a length twice its diameter, the subbasal whorl thick, short, subapical band rather broad, thick, long; circumfili at the basal third and apically; terminal segment somewhat produced, obconic, tapering to a narrowly rounded apex. Palpi; first segment with a length three times its diameter, the second one-half longer, the third one-half longer than

the second, and the fourth as long as the third, all very thickly haired. Mesonotum probably fuscous yellowish. Abdomen presumably yellowish orange; genitalia yellowish. Wings hyaline, costa uniting with costa at the basal third, the third vein a little beyond the apex, the fifth at the distal fourth, the sixth near the basal half. Halteres whitish transparent. Legs probably pale yellowish; claws moderately stout, strongly curved, unidentate, the pulvilli shorter than the claws. Genitalia; basal clasp segment stout, obliquely truncate, the internal distal angle distinctly produced, setose; terminal clasp segment stout, somewhat swollen apically and with a relatively slender, chitinous tooth on the broadly rounded apex; dorsal plate long, deeply and narrowly incised, the lobes narrowly rounded, sparsely setose; ventral plate long, broadly and roundly emarginate, the lobes broadly rounded, thickly setose. Harpes heavily chitinized, slender, irregularly curved, acute apically.

Female.—Length 1.5 mm.—Antennae extending to the third abdominal segment, rather thickly haired, apparently yellowish brown; 23 subsessile segments, the fifth obconic, with a length three-quarters its diameter, subbasal whorl thick, stout, subapical whorl sparse; terminal segment produced, with a distinct knob apically. Mesonotum probably yellowish brown. Scutellum and postscutellum presumably yellowish. Abdomen probably yellowish orange; ovipositor yellowish. Halteres yellowish transparent. Legs a nearly uniform pale straw; claws stout, strongly curved, unidentate, the pulvilli longer than the claws. Ovipositor one-half the length of the abdomen, the lobes consisting of a stout basal subquadrate segment, with a narrowly oval apical one, both sparsely setose.

Type Cecid. a 1955 N. Y. State Museum.

Asphondylia attenuatata n. sp.

This species was reared in some numbers from flower buds and flowers of privet or wild coffee, probably *Faramea odoratissima*. The male is peculiar on account of the slender, somewhat produced antennae, the flagellate segments being provided with unusually small and indistinct circumfili.

Male.—Length 2 mm.—Antennae nearly as long as the body, sparsely haired, presumably fuscous yellowish; 14 sessile segments, the fifth with a length fully six times its diameter and uniformly clothed with short setae, the sparse subbasal whorl being absent and the tortuous, slightly elevated circumfili very indistinct; terminal segment hardly reduced and tapering slightly to a broadly rounded apex. Palpi; first segment stout, with a length three times its diameter, the second a little longer, slender. Mesonotum dark brown. Scutellum and post-

scutellum fuscous yellowish. Abdomen brown; genitalia fuscous yellowish. Wings hyaline, costa pale straw, subcosta uniting therewith before the basal half, the third vein at the apex, the fifth near the distal fourth, its branch near the basal third. Halteres yellowish basally fuscous apically. Coxae fuscous yellowish. Legs a pale straw; claws stout, strongly curved, simple, the pulvilli longer than the claws. Genitalia; basal clasp segment short, stout; terminal clasp segment short, swollen, apical tooth bidentate; dorsal plate short, deeply and triangularly incised, the lobes angulate, sparsely setose. Other structures indistinct.

Type Cecid. a 1957 N. Y. State Museum.

Lobodiplosis spinosa n. sp.

This remarkable fly was taken at light, St. Johns, Antigua, in January, 1909. The male is easily recognized by the greatly produced genitalia, the peculiar spinose setae of the basal clasp segment and the heavy, chitinous spines of the harpes. The female, apparently taken in some numbers, is provisionally associated with the male on account of the two being captured together.

Male.—Length 1.5 mm.—Antennae probably one-half longer than the body, thickly haired, fuscous yellowish; 14 segments, the fifth having the basal stem with a length two and a half times its diameter, the distal stem with a length three times its diameter, the basal enlargement subglobose, subbasal whorl thick, the circumfili short, extending to the middle of the stem, the distal enlargement produced, with a length two and a half times its greatest diameter, constricted near the basal third, the basal circumfilum short, the loops extending to the middle of the enlargement, the distal circumfilum rather short, the loops extending to the apex of the enlargement; subapical whorl rather thick, long. Palpi; the first segment presumably short, stout, the second with a length four times its diameter, the third as long as the second, the fourth one-quarter longer and more slender. Mesonotum apparently fuscous yellowish. Scutellum, postscutellum and abdomen probably yellowish. Wings hyaline, subcosta uniting with costa at the basal third, the third vein at the apex, the fifth at the distal fourth, its branch near the basal half. Halteres pale yellowish. Legs yellowish straw; claws rather stout, strongly curved, the anterior unidentate. Genitalia; basal clasp segment long, very slender, slightly expanded apically and with a distinct rounded lobe, the tip of the segment and the lobe thickly clothed with long, stout, spine-like setae; terminal clasp segment subapical, long, slender, slightly curved; dorsal and ventral plates indistinct. Harpes long, chitinized, with a pair of

heavy, curved spines basally and a much larger, more strongly curved pair near the distal third.

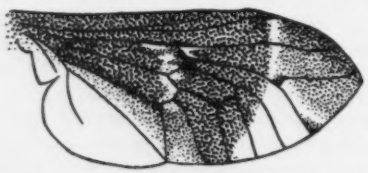
Female.—Length 1.5 mm. —Antennae extending to the third abdominal segment, sparsely haired, fuscous yellowish; 14 cylindric subsessile segments, the fifth with a stem one-quarter the length of the basal enlargement, which latter has a length two and a half times its diameter; subbasal whorl sparse, stout; subapical band thick, broad; terminal segment produced, with a length six times its diameter and tapering nearly uniformly to a subacute apex. Palpi; first segment somewhat produced, narrowly oval, the second one-half longer, slender, the third shorter and broader than the second, the fourth longer, a little broader than the third. Mesonotum fuscous yellowish. Scutellum and postscutellum yellowish. Abdomen reddish; ovipositor yellowish. Halteres pale yellowish. Legs a pale straw. Ovipositor short, the terminal lobes long, narrowly lanceolate, slightly dilated apically, sparsely setose.

Type Cecid. a 1956 N. Y. State Museum.

Male of Chrysops brimleyi Hine.

By CHAS. T. GREENE, Philadelphia, Pa.

Like the female, except basal half of the antennae clothed with long black hair. Frontal triangle gray pollinose, with the apex shining black. Thorax black, clothed with black hair, no stripes visible. The abdomen black, with the posterior margins of all the segments, except the first, gray pollinose. The wings differ from the female in having the basal end of the black cross-band reaching slightly beyond the middle of the anal cell. The first basal cell has two hyaline spots near the apex, and the second basal cell, one. First submarginal cell with



a hyaline spot at the base. The discal cell has a hyaline spot at the base, the fifth posterior cell has a semihyaline spot at the base and one at the apex. The apical spot reaches downward over the upper end of the marginal cell, covering about half the first submarginal and nearly all the second submarginal cell. A small black spot at the apex of the posterior branch of the third vein.

Length about 8 mm.

A single specimen taken at Glassboro, N. J., May 19, 1907, by the writer. The females were very common.

(For description of other sex, see Can. Ent., page 55, 1904.)

Packing Butterflies and Moths for Shipment.

By Wm. J. Gerhard, Chicago, Ill.

Although nearly every person interested in entomology occasionally finds it necessary to prepare insects for shipment, nevertheless a considerable lack of appreciation of the protection the material requires is still quite frequently apparent. Even when only a limited number of specimens must be conveyed for some distance, a certain amount of care in preparing them for this purpose is very essential. Much more important, however, do the requirements for packing insects become, when an entire collection must be moved from one section of the country to another.

This phase of entomological technique has not been ignored in previous volumes of the News. It will, therefore, not be an innovation, and may prove of some interest, to give a brief account of the method used, when packing and shipping the large and valuable collection of butterflies and moths, made by the late Dr. Herman Strecker of Reading, Pa., and recently acquired by the Field Museum of Natural History of Chicago. The customary way of protecting insects against injury while being transported having proved quite satisfactory on former occasions, practically no departure was made from the usual manner of preparing them for shipment. The following account, therefore, merely illustrates the safety with which an extensive collection of butterflies and moths can be moved from one city to another.

A large amount of work of a preparatory nature was, of course, necessary before any of the material could be packed. The first step in the desired direction was to number the cabinets and all of the drawers, so that the original order of their arrangement could easily be maintained. But much more essential was it to preserve the original arrangement of the specimens in the drawers. Hence even if the size of the collection would not have made it an almost impossible task, it would not have been well to disturb the specimens by transferring them into cotton lined drawers, or to arrange them shingle-like, as is frequently done with small lots of similar insects.

Although it was neither desirable nor practical to condense the material in any of the drawers, excepting a few which contained duplicates, other protective measures were still available.

To lessen the possibility of an insect becoming loose and rolling around, while the drawer was being handled, every pin was tested and forced more deeply into the cork or wood, whenever it was considered necessary. A surprisingly large number of pins had to be made more secure in this manner. Since many of the drawers contained no cork, and in as much as all of the specimens were mounted on brass pins, this work demanded the almost constant use of the pinning forceps, as well as a great deal of care.

The next procedure was to find those specimens that were loose on their supports. They were easily detected by touching each insect lightly and carefully with a pin. Those that were not held firmly were made secure by means of a pin inserted on each side of the body of the insect. When this method was not possible, the desired stability was obtained by placing pins in front of the costal edge of the forewings. As an additional precautionary measure, the bodies of all the large species were protected in the above manner, even though they showed no tendency to turn on their pins. Broken specimens were either mended or in some other way secured from further injury, and a few of the very large species were shelved, that is, their wings were supported by strips of cardboard.

How to protect the insects so that there would be only a minimum amount of damage, were the glass in the covers of the drawers to break while being handled, was also a problem that deserved some attention. Paper pasted to the surface of the glass no doubt would afford some protection, and on the strength of this supposition about 80 drawers were treated in this manner, the form of their covers permitting no other way of using the paper. But fortunately a suggestion kindly given by Dr. Skinner was found to be much more practical, namely, to place a sheet of thin, strong paper over the drawer before replacing the cover. In this way the contents of over

700 drawers were covered, with but little loss of time either in placing the paper in position or in removing it when the collection was unpacked. The utility of the presence of the paper, however, still remains to be ascertained, but, in as much as it prevented a lot of crumbling putty from falling on the specimens, it seems reasonable to suppose that it would also have afforded some protection, if the glass in some of the covers had broken. In examining and protecting in the above manner all of the material in the collection, over three weeks were consumed by the writer, Mr. E. L. Hettinger also kindly giving some assistance. It was not until this preliminary work had been completed that the packing was started.

Six of the small-sized drawers, five of the larger ones, were placed one above the other, the glass of the top drawer being protected by a covering made of boards five-eighths of an inch in thickness. Each one of those tiers was wrapped in strong, heavy paper, securely tied, numbered, and then set aside. When all of the drawers had been removed from a cabinet, it was taken apart and its sections were lowered to the basement, where all of the books and correspondence had already been taken, in order to obtain sufficient space in the room to pack and store the insects.

For each tier of drawers a durable shipping-case was used. The dimensions of the box exceeded the size of the package of drawers by at least four inches in every direction. This intervening space was filled with either hand or machine picked excelsior, care being taken to pack it neither too loosely nor too tightly. In as much as the weight of the drawers would compress the excelsior to some degree and thereby lessen its utility, a little more of the packing material was put in the bottom of the box than in the top. Even though the insects were packed in excelsior, jarring the shipping-case was to be avoided as much as possible, and for this reason the lid was fastened by means of screws. The shipping tags and the fragile-labels were likewise attached to the lid before it was screwed on the box.

On account of the inconvenience of using the narrow stair-

way leading to the third story room in which the collection was contained, everything was carried to one of the windows and lowered to the ground by means of a block and tackle. This proved to be a safe and satisfactory way of handling the material. Some idea of the amount of work necessary to ship this collection can be had by stating that 15 bales of excelsior were needed to pack the insects and that 139 shipping-cases were required for the drawers, besides the boxes used for the books and correspondence. The weight of the packed insects was over 14,000 lbs., the books, cabinets, etc., over 5000 lbs. Throughout all of the packing, lowering to the ground, loading on the van and placing in the car, the fragile nature of the material was constantly impressed upon the men who were doing this part of the work.

On placing the collection in the freight car no attempt was made to protect the insects from the vibration and jarring to which they would be subjected; the only precaution taken was to arrange the boxes, right-side-up, in such a way that there could be no lateral motion. To prevent them from shifting backward and forward, heavy braces were fastened to the interior of the car. Since insects, which are classified as stuffed animals, are scheduled at three times the regular first class rate, it is not surprising, perhaps, that the railroad officials were inclined to display some interest in the shipment. As a result of this interest, the fragile nature of the shipment was indicated by means of signs, and special instructions were given to the trainmen at both ends of the line, the car thereby no doubt escaping much rough handling. Naturally the collection was insured against loss by fire, collision or derailment while on the car.

During the work of transferring the collection from the car to the Museum, the order of the day again was—Care; from the beginning to the end it was the watch-word. Perhaps to it was due to a considerable extent the very satisfactory condition of the material, when it was finally unpacked.

How needless was the fear or doubt concerning the safe arrival of the collection! Not one of the 800 glass covers was

broken; but one insect, a duplicate moth, was loose in all of the drawers. Despite the frequent handling and the 900 mile ride to which the insects were subjected, the only signs to indicate that the collection had ever been moved, were five or six detached bodies and here and there a broken antenna. Considering the number of specimens, at least 50,000, and the age of some of them, the results certainly demonstrate the efficiency of the above method of packing butterflies and moths for shipment.

An Illustrated Glossary of Chaetotaxy and Anatomical Terms Used in Describing Diptera.

By W. R. Walton, Harrisburg, Pa.

(Plates XIII, XIV, XV, XVI)

These plates and the accompanying glossary are presented by the author with the sincere hope that they may prove of material assistance to workers in dipterology, especially beginners, many of whom have, no doubt, been dismayed at the formidable array of technical terms which confront one who attempts to make use of the writings of the various describers for purposes of classification.

Most of the older works on this subject are out of print and inaccessible except to the lucky few; others are scattered through various volumes of periodical publications and are troublesome to collate.

Some of the more recent works on classification contain glossaries more or less complete, but none of them is fully illustrated.

In treating a subject so dry and complicated as the one in hand, too many illustrations cannot be used. The mind must be afforded the opportunity of visualizing, else confusion is sure to exist and a clear comprehension of the subject becomes well nigh impossible. Then too, most of the plates hitherto introduced are arranged upon the old plan of numbering or lettering the parts shown. Rarely the explanations regarding the same are to be found on the same page with the illustra-

tions; more usually they are on the next page or elsewhere and it becomes necessary for the user to refer from page to page, in order that he may comprehend the figures. This promptly results in fatigue of the eyes with consequent loss of time, confusion of the intellect and probable profanity.

In order to avoid these things the principal terms, etc., have been written directly upon the accompanying plates and it is believed that the arrangement will be found convenient and useful.

It will be seen by reference to the text, that the terms applied to each principal part of the anatomy, have been arranged in alphabetical order, beginning with those of the head, those of the thorax, abdomen, legs and wings following in the order named.

It seems deplorable that there should be in general use several names for any one part. It is difficult to find unoccupied corners enough in one's memory to accommodate the single terms, to say nothing of those regions having from 4 to 6 names.

For example, those parts known variously as the Calypters, Tegulae, Squamulae, Alulae, etc., ad nauseum, illustrate what is meant.

The chief end of a scientific nomenclature as the writer understands it, is to preserve us from this very confusion and multiplicity of terms; and if this end be not attained, then why not return to vulgarisms? We should then at least gain an inkling of what was meant.

In compiling this list of terms an effort has been made to include therein, not only the names of the bristles and bristle-bearing surfaces of the anatomy, but also those other terms, which are most often mentioned in descriptions of the various writers on Dipterology; hoping thereby to extend the scope of its utility.

It will also be seen that one, large species, of common occurrence and wide distribution, has been used wherever possible in the illustrations, for the purpose of allowing a comparison of the plates with the actual organism; which arrangement should prove of value.

Most grateful acknowledgment is herewith made of the help afforded in the preparation of this paper by Mr. C. H. T. Townsend in the revision of plates, additions and corrections.

Mr. C. W. Johnson and H. L. Viereck gave valuable assistance and advice. Prof. J. S. Hine and D. W. Coquillett also afforded valuable suggestions and last but not least Mr. Erich Daecke has shown the deepest interest in the work and was most generous in the matter, lending specimens, etc.

A short bibliography is herewith appended:

An Essay of Comparative Chaetotaxy, or the arrangement of the characteristic bristles in Diptera, C. R. Osten Sacken, Entomological Society of London, Nov. 5th, 1884.

Manual for the Study of Insects, John Henry Comstock and Anna B. Comstock, Ithaca, N. Y., 1899.

Muscidae Collected by Dr. Donaldson Smith in Somaliland, Dr. Garry DeN. Hough, Proceedings Academy of Natural Sciences, 1898, pp. 165-172.

Manual of North American Diptera, Dr. S. W. Williston, New Haven, Conn. 1908.

Explanation of Terms used in Entomology, Dr. Jno. B. Smith, Brooklyn Entomological Society, Brooklyn, N. Y. 1906.

The Taxonomy of the Muscoidean Flies, Including Descriptions of New Genera and Species, C. H. T. Townsend, B. Sc., Smithsonian Misc. Collections No. 1803, 1908.

BRISTLES AND REGIONS OF THE HEAD.

Antennae, a pair of jointed sensory organs, borne, one on each side of the head. Always 3-jointed in the Myodaria and bearing a dorsal arista, which may be plumose, pubescent or bare.

Antennal foveae, a pair of grooves in the middle of the face as though for the lodgment of the antennae; they may be separated by a carina or keel and are bounded on the sides by the facialia or vibrissal ridges.

Arista, a specialized bristle; borne on the upper or dorsal side of the third joint of the antenna in the Myodaria. Morpho-

logically speaking, it is the rudiment of the terminal antennal joints, to be found in the lower groups of Orthorrapha. Primarily functional as a tactile sensory organ.

Beard, pilosity arising and depending from the lower portion of the occiput.

Bucca, that part of the head and face below the transverse impression, under the eye, extending downward to the edge of the mouth opening upward along the outside of the facialia and continuing backward to the great foramen.

Cheeks, the space between the lower border of the eye and oral margin, merging into face at front and limited by the occipital margin behind. This term is not exactly synonymous with the Buccae of Hough, which see.

Clypeus, a part of the mouth structure, often visible below the margin of the mouth in front as a more or less visor-shaped piece.

Cruciate bristles, a pair in the middle of the lower part of the front, directed inwardly and forwardly; observed in some Calypterae and Acalypterae.

HEAD.

Epistoma, the oral margin and an indefinite space immediately contiguous thereto; not often now used.

Eyes (compound), placed on the sides of the head and composed of many simple eyes they may be bare (glabrous), or pubescent.

Eye, occipital margin of. That edge of the compound eye bordering upon the posterior orbit and occiput.

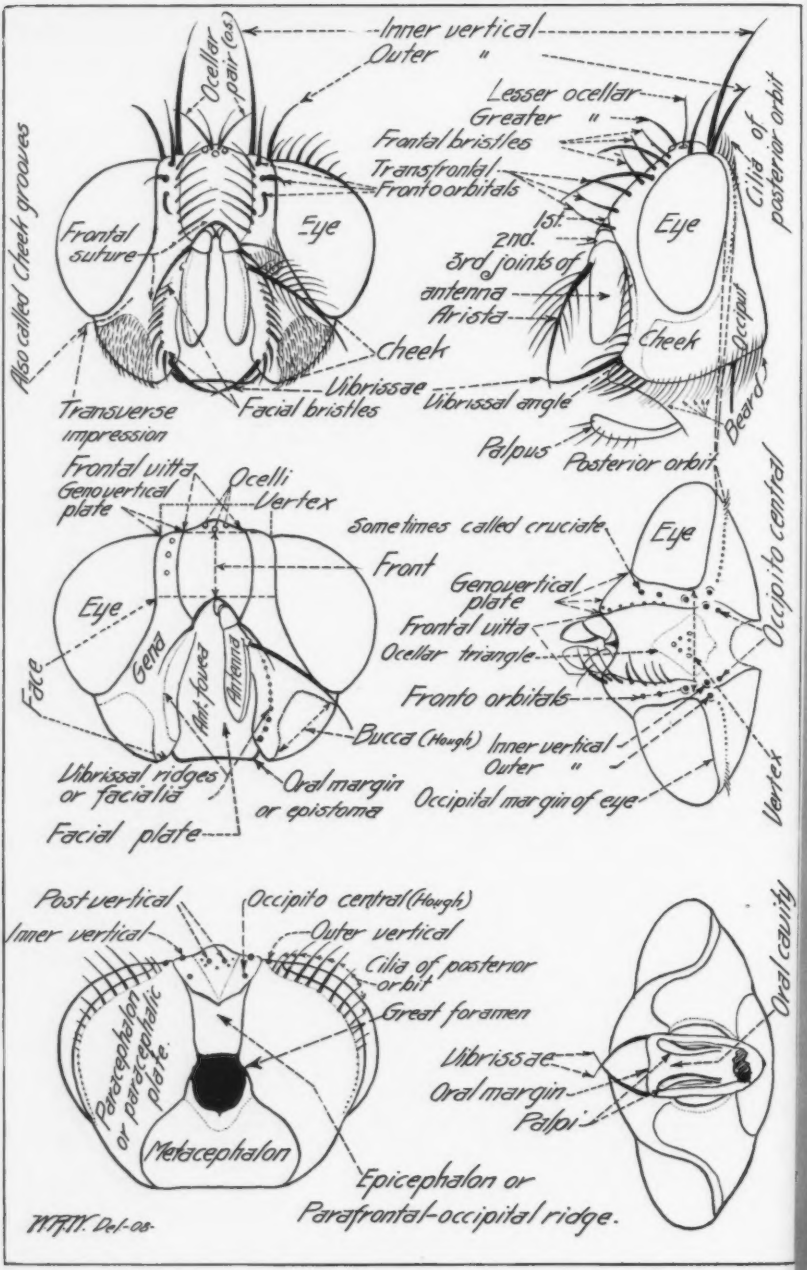
Face, that area of the head bounded by the base of the antennae, the oral margin, eyes and cheeks.

Facial depression, see Antennal foveae.

Face, transverse impression of. See transverse impression.

Facial bristles, inserted in a series on each side of the middle portion of the face, above the vibrissae along the facialia; especially conspicuous in Tachinidae.

Facialia, two distinct ridges inside the arms of the frontal suture, constituting the lateral boundaries of the facial depression.



WALTON ON DIPTERA.

Facial carina, a keel or projection lying between the antennae, on the median line of the face, present in some Calypterae.

Facio-orbital bristles, borne on that portion of the face lying below the base of the antennae and limited below by the transverse impression.

Foramen, great or central. The opening in the center of the occiput at the back of the head; into which is inserted the neck.

Front, the space between the eyes in dichoptic flies; limited by the upper margin of the head and a line drawn through the root of the antennae.

Frontal bristles, ascending. The uppermost of the frontal bristles from 1 to 4 in number.

Frontalia or Frontal vitta, that portion of the front bounded by the ocelli, the root of the antennae and the genovertical plates or parafrontals.

Frontal bristles, a row on either side of the median vitta descending to or often below the root of the antennae, on the side of the face anteriorly; of much use in the classification of the Calypterae.

Frontal lunule, an oval or crescentic space just above the root of the antennae in Cyclorraphous flies, bounded by the frontal suture.

Frontal suture, ptilinal suture or frontal fissure. A suture having the general shape of an inverted U, the arms of which make with each other more or less of an angle. It occupies the center of the muscoidean face and it is through this suture, just above the root of the antennae, that the ptilinum is thrust in forcing the cap from the pupa shell.

Frontal triangle, the triangle between the eyes and the root of the antennae, the apex of which is above. Sometimes the term is applied to a triangle indicated by color or depression in the dichoptic front.

Fronto-orbital bristles, a bristle or bristles on each side of the front near the orbit, immediately below the vertical bristles; there may be 1, 2 or none on each side.

Fronto-orbital bristles, lower. Situated on the lower part of

the front near the eyes and not quite in line with the fronto-orbitals. They are not of frequent occurrence.

Gena, or parafacial, that part of the side of the face which is above the transverse impression and bounded on the sides by the arm of the frontal suture and the anterior border of the eye respectively.

Genovertical plate, the continuation of the gena upward extending to the vertex.

Inner vertical bristles, the inner pair of 4 bristles inserted on the vertex more or less behind the upper and inner corner of the eye, erect or convergent; usually the larger of the 2 pairs.

Lateral facial bristles, one or 2 bristles sometimes present on the sides of the face below, toward the eye.

Lunula, see frontal lunule.

Mesofacial plate, that portion of the face enclosed by the frontal suture and the vibrissal ridges in which are found the antennal foveae.

Metacephalon, the segmented post oral portion of the head.

Occiput, that portion of the head in the rear of the cheeks and eyes, upon the lower part of which is borne the beard.

Occipito-central bristles, a pair of bristles on the upper part of the occiput, just below and almost in line with, the inner vertical pair.

Occipito-lateral bristles, a pair of bristles borne one on each side a little back of, below and toward the outside of the outer vertical bristles.

Ocellar bristles, lesser. From 3 to 12 pairs, usually inserted in two parallel lines, sometimes in 4, which begin very close to the insertion of the greater ocellar bristles and extend backward a variable distance.

Ocellar bristles, ocellar pair, greater ocellars, etc., on the ocellar triangle just back of the foremost ocellus; they are always diverging and pointing forward.

Ocellar plate, or ocellar triangle. A triangle, indicated by grooves or depressions, on which the ocelli are situated.

Ocelli, or simple eyes, on the upper part of the front in the middle, between or a little back of the compound eyes, usually 3 simple eye lenses, present in most diptera.

Orbits, the space immediately contiguous to the eyes, sometimes indicated by structural characters, at other times indefinite.

Oral margin, the anterior edge of the oral cavity, being the lower edge of the epistoma.

Oral cavity, the cavity directly below the edge of the epistoma, covered over in front with an oblique posteriorly extending skin or membrane.

Outer vertical bristles, the outer pair of 4 bristles, borne on the vertex and nearest to the inner and upper corner of the eyes; erect or diverging.

Palpi, the mouth feelers; in the Calypterae usually club shaped and attached to the proboscis near its base.

Paracephalon or paracephalic plates, the lateral segmented portions of the occiput, separated by the metacephalon and the epicephalon. Parafacials, see Gena.

Parafrontals, see genovertical plates.

Parafrontal—occipital ridge or Epicephalon, a ridge-like sclerite formed by what seems to be a continuation of parafrontals over vertex on occiput and which bifurcates above the great central foramen.

Peristoma, see epistoma.

Posterior orbit, that portion of the occiput bordering on the occipital margin of the eye; usually bare and bounded on the rear by a row of small bristles.

Posterior orbit, cillia of. A row of bristles along the rear border of the posterior orbit, in the Calypterae.

Postvertical bristles, the most rearward pair of lesser ocellar bristles, placed close together, one on each side of the median line of the occiput, below the inner verticals and above the occipitocentrals.

Preocellar bristles, a small pair of bristles sometimes found on the front below the anterior ocellus.

Proboscis, the extensile mouth, usually more or less folded up under the head when at rest.

Ptilinal suture, see frontal suture.

Transfrontals, a variable number of the frontal bristles which are directed across the frontal vitta.

Transverse impression of the face. Also called cheek groove (Townsend). A more or less distinct depression beginning at the ventral end of the arm of the frontal suture, running thence almost horizontally, becoming narrower as it proceeds, under the eye, to the occipital margin thereof.

Vertex, the top of the head bounded by the eyes, front and occiput.

Vertical triangle, the triangle on the upper part of the head between the eyes in holoptic flies, it bears the ocelli which may be situated on a triangle indicated by grooves or depressions or colorations, called the ocellar triangle.

Vibrissae, a pair of stout bristles on the lower end of the facialia, immediately above the peristomium and below the antennal foveae on each side, often accompanied by some smaller bristles.

Vibrissal angles, two prominences at the lower ends of the facial ridges upon which are borne the vibrissae.

Vibrissal papillae, projections sometimes present at the vibrissal angles.

Vibrissal ridges, see facialia.

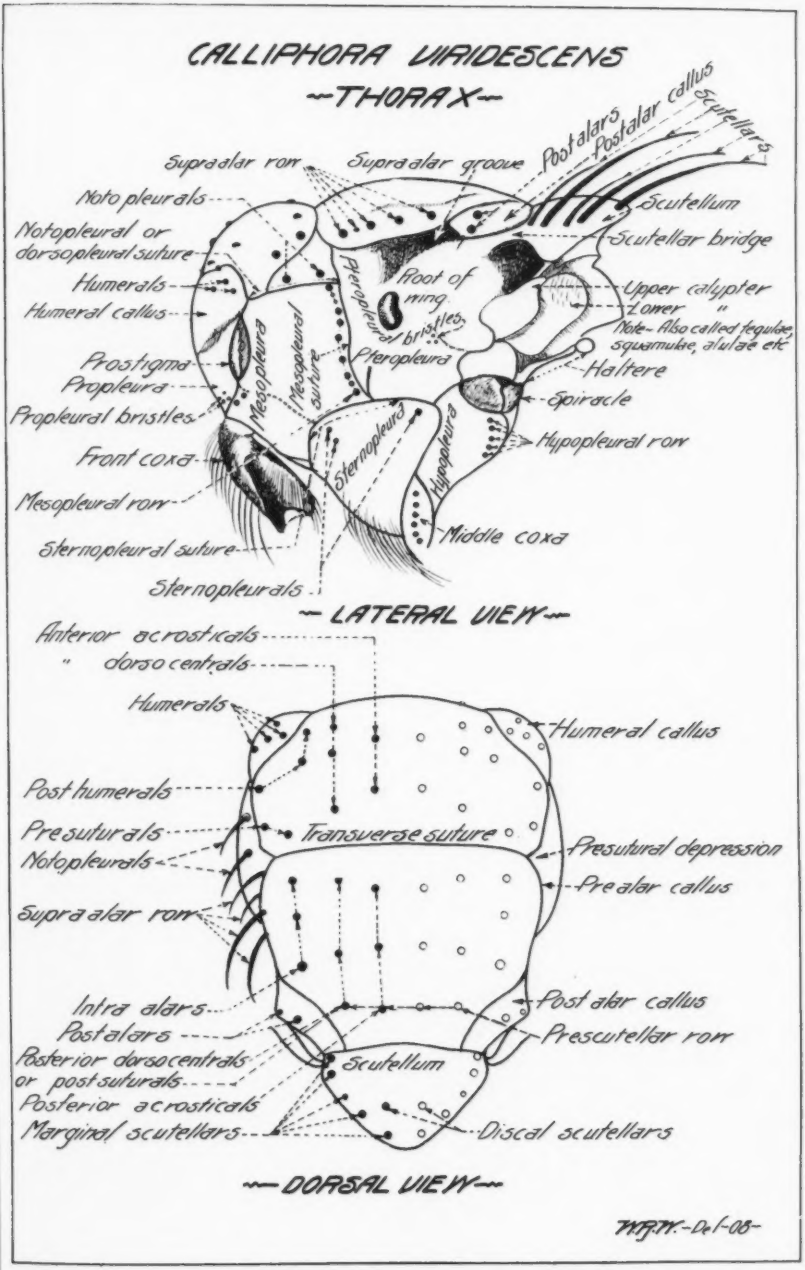
Bristles and Regions of the Thorax.

Acrosticals, posterior and anterior. A row of bristles next to the median line, on the dorsum between the 2 rows of dorsocentrals; those before the transverse suture are called anterior or preacrosticals: those behind it, posterior or postacrosticals.

Calypters, a pair of membranous scales situated above the halteres and back of the root of the wing, one above the other. They have been called variously by different authors, tegulae, alulae, squamae or squamulae, calyptrae, etc. The terms alulae and tegulae are applied to entirely different parts by several writers and are the occasion of confusion in the matter.

Discal scutellars, see scutellars.

Dorso-central bristles, on each side, a row on the inner part of the dorsum at the outer side of the acrostical. Those before the transverse suture called anterior, those behind, posterior dorsocentral or postsutural.



WALTON ON DIPTERA.

Humeral bristles, one or more bristles inserted on the humeral callus.

Humeral callus or humerus, each of the anterior superior angles of the mesothorax, usually a more or less rounded callus.

Hypopleura, the space over the middle and hind coxae between the metapleura and peteropleura.

Hypopleural row, a row of bristles running in a more or less vertical direction on the hypopleura; usually directly over the hind coxae. They are sometimes grouped into a tuft and occur only in the Calypterae.

Intraalar, a row of 2 or 3 bristles between the supraalar group and the dorsocentral bristles.

Intra humerals, see post humerals.

Mesopleura, the space situated in front of the root of the wing, between the dorsopleural and sternopleural sutures.

Mesopleural row, bristles inserted on the mesopleura near the angle formed by the dorsopleural and mesopleural sutures.

Mesopleural suture, a suture running from the root of the wing downward and separating the mesopleura from the pteropleura.

Metapleura, the sides of the metanotum, a more or less swollen space at the outside of the metanotum and between it and the pteropleura and hypopleura. (More or less hidden by the calypters in the figure.)

Notopleural bristles, usually 2, inserted immediately above the dorsopleural suture, between the humeral callus and the root of the wing, on the bottom of the presutural depression.

Notopleural or dorsopleural suture, the suture running from the humerus to the root of the wing, separating the mesonotum from the pleura.

Post alar bristles, on the postalar callus back of the supraalar bristles.

Post alar callus, a more or less distinct rounded swelling, situated between the root of the wing and the scutellum.

Posthumeral or Intrahumeral bristles, one or more bristles situated on the inner margin of the humeral callosity.

Prealar callus, a not very prominent projection, situated before the root of the wing, on the side of the mesonotum, just back of the outer end of the transverse suture.

Prescutellar row, the hindmost bristles of the acrostical and dorsocentral rows, forming a transverse row in front of the scutellum.

Presutural bristles, one or more bristles, situated immediately in front of the transverse suture, above the presutural depression.

Presutural depression, usually triangular in shape, at the outer end of the transverse suture, near the notopleural suture.

Propleura, a space situated immediately in front of the anterior spiracle of the thorax and below the humeral callus.

Propleural bristles, one or more bristles inserted on the lower part of the propleura, immediately above the front coxa.

Proalar bristle, the Pro alarborste of Stein, in the Anthomyidae, a bristle on the back of the thorax which stands immediately before the largest and strongest supraalar bristle at the base of the wings.

Prostigma or anterior thoracic spiracle, placed between the propleura and the mesopleura, immediately below the humerus.

Pteropleura, situated below the root of the wing, back of the mesopleural suture.

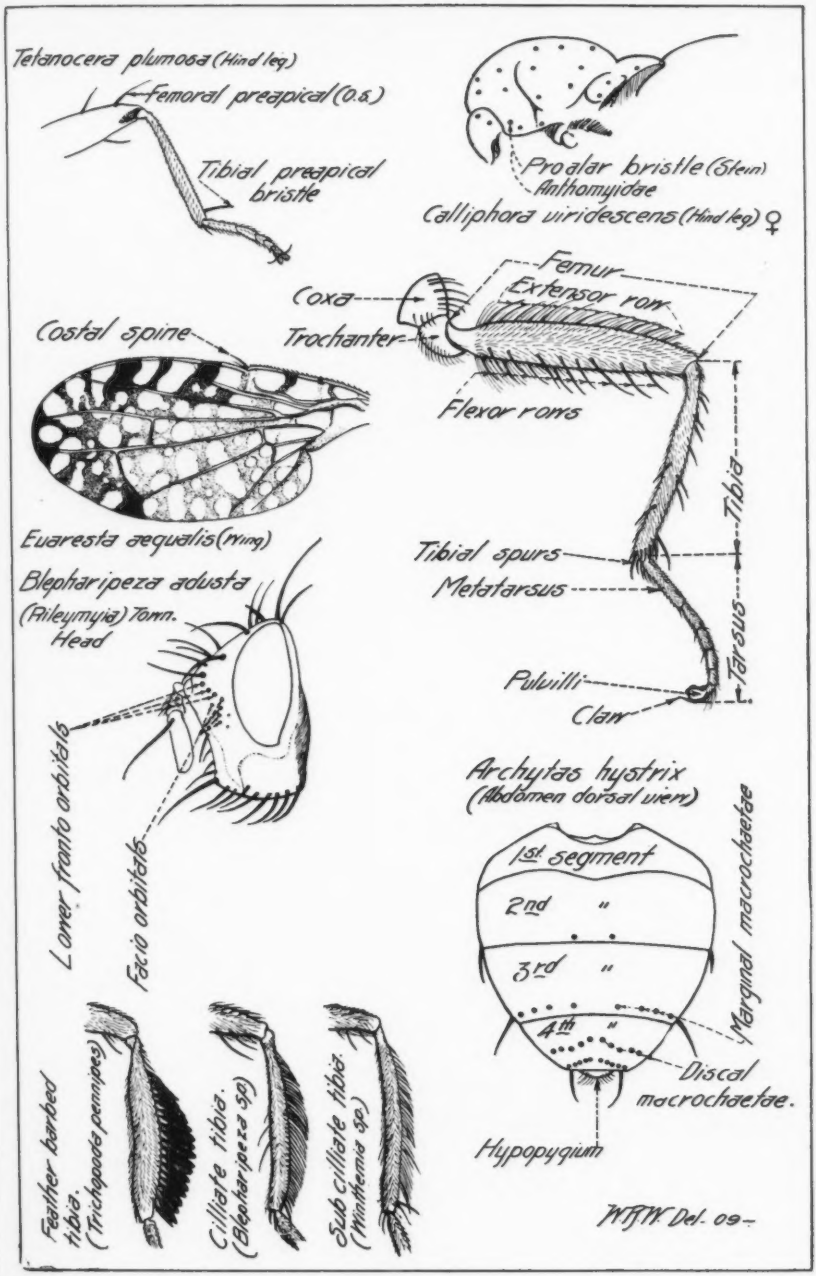
Pteropleural bristles (rare), inserted on the pteropleura, hard to see; found in *Trypeta.*

Scutellar bristles, discal. Usually a single pair of bristles borne on the dorsal portion of the scutellum, one on each side of the median line, slightly behind its middle.

Scutellar bristles, marginal. Usually a distinct row of large bristles, borne on the margin of the scutellum, which point upward and backward with a slight curve inward.

Scutellar bridge, a small ridge on either side of the scutellum, connecting it with the mesonotum.

Scutellum, a sub-hemispherical body posteriorily cut off by an impressed line from the dorsum of the mesothorax; it usu-



WALTON ON DIPTERA.

ally presents a triangular or shield shaped surface upon its dorsal area in the Diptera.

Squamae, see calypters.

Sternopleura, the lower part of the pleura, below the sternopleural suture.

Sternopleural bristles, one or several bristles on the sternopleura below and near the sternopleural suture.

Supraalar bristles, usually one to 4 bristles above the root of the wing, between the notopleural and postalar bristles.

Supraalar groove or cavity, a groove on the mesothorax immediately above the root of the wing.

Sternopleural suture, the suture below the dorsopleural suture, nearly parallel with it and separating the mesopleura from the sternopleura.

Transverse suture, an impressed line running straight across the mesonotum and terminating a little in front of the root of the wing. It is more or less incomplete in the middle.

Trichostical bristles, a fan like row on the metapleura, not found in the calypterae.

LEGS.

Claws (ungues).

Two chitinous hooks placed at the end of the last tarsal joint on each leg.

Coxa, the joint of the leg, which connects that member to the body of the insect.

Empodium, a median appendage on the under side of the foot, between the claws, either in the form of a pad, or like a bristle or a spine.

Extensor row, a row of bristles on the upper surface of the femur.

Femur, almost invariably the longest and stoutest joint of the legs. It is the third joint counting from the body outwardly.

Flexor row, one or more rows of bristles placed along the lower surface of the femur.

Mesal surface of the leg. That surface of the front and hind legs which is naturally turned toward the body.

Metatarsus, that tarsal joint which is next to the tibia. Dr. Williston urges the abandonment of this term as etymologically incorrect.

Preapical bristle, a large bristle found on the outer third of the tibia in some families of Acalypterae, it is quite distinct from the tibial spurs and is placed on the outer surface of the tibia.

Pulvilli, two pad-like fleshy cushions, attached to the last joint of the tarsus below the claws.

Tarsus, the division of the leg beginning at the outer end of the tibia; usually composed of 5 joints in the Diptera.

Tibia, that division of the leg which is attached to the outer end of the femur; it may be likened to the shin of an animal.

Tibial spurs, one or more distinct bristly spines terminating the tibia.

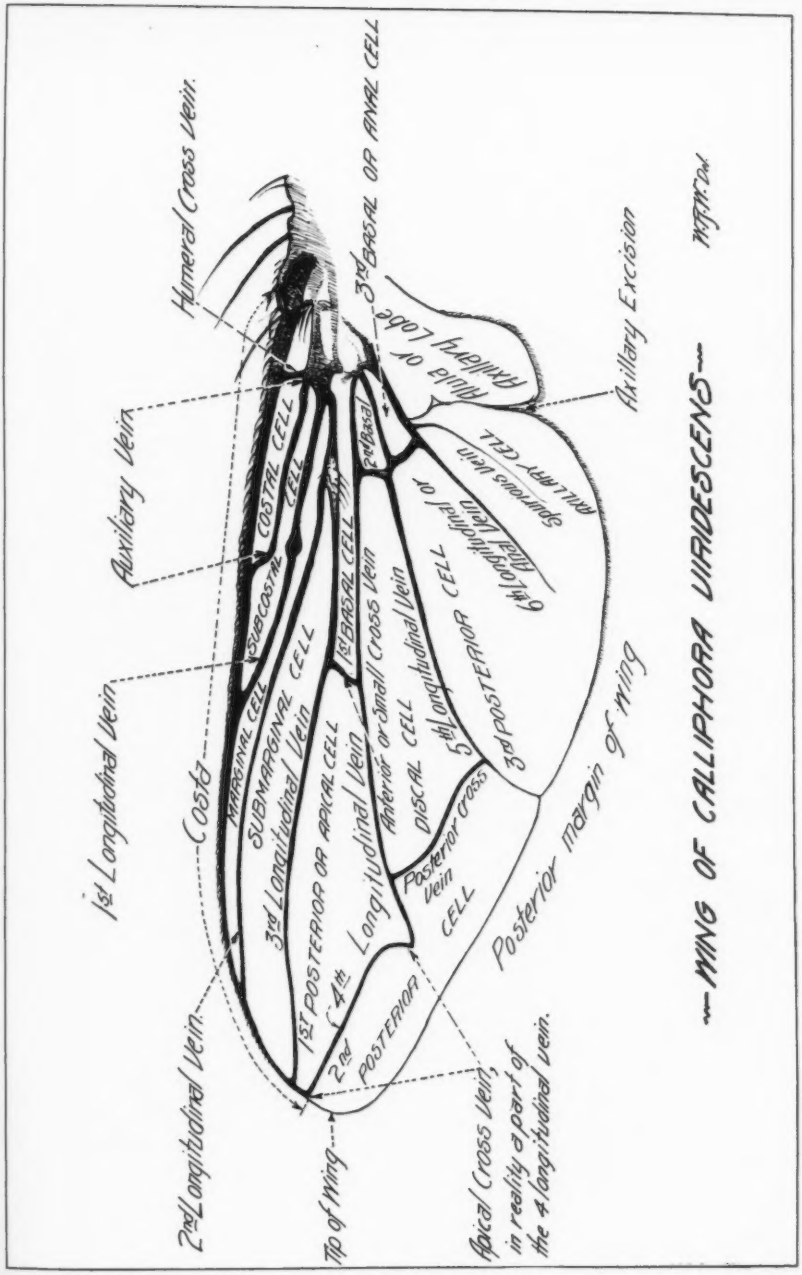
Trochanter, that joint of the leg which connects the coxa and femur.

Wings.

It is deemed unnecessary to go very far in defining the veins and regions of the wing because of the fact that the plate published herewith shows more clearly than is possible to express in words, the relation of these parts, one to another. There are, however, a few terms which would be the better understood for a few words of explanation; these will be found below.

Axillary lobe, also called alula by some writers. That portion of the hind margin of the wing between the axillary excision and the base of the wing. The term alula used in this connection is more or less misleading as the same is used to denote the calypters or squamae.

Apical cross vein, that portion of the fourth vein lying between the bend and the margin of the wing in the muscoidean flies. This is of course not a cross vein at all, in the true sense of that term and Mr. C. H. T. Townsend very properly remarks, "This term should be employed only when the fourth vein is furcate, or shows indication of a previous furcation in



WALTON ON DIPTERA.

a stump, fold or wrinkle," it is, however, used quite generally by the older writers to indicate that portion of the fourth vein above mentioned.

Apical cell, the first posterior cell, i. e., that cell which is bounded by the third vein, the anterior cross vein, the fourth vein and the outer margin of the wing.

Costal spine, a stout bristle present in some families of flies, on the costa, near the end of the auxiliary vein.

Middle, anterior or small, cross vein; it should be remembered that this vein always connects the third and fourth longitudinal veins and bounds the inner end of the first posterior cell.

Spurious vein, a fold running from the base of the axillary excision toward the hind margin of the wing. There is in the Syrphidae also a spurious vein running from the base of the wing in a more or less longitudinal direction through the first basal and first posterior cells and lying across the anterior cross vein.

Pemphigus venafuscus n. sp.*

By Edith M. Patch.

(Plate XVII)

On October 1, 1909, large numbers of a dark winged flocculent *Pemphigus* were observed by the writer to be settling upon the trunks of lilac bushes (*Philadelphus syringa vulgaris*) about half a mile from the University of Maine Campus. They sought the rough places in the bark and deposited the minute sex forms characteristic of this genus. A *Syringa* aphid seemed so remarkable an occurrence that the lilacs on the campus were examined and were found to be similarly sought by the same unknown species. This shrub was not, to all appearances, a haphazard choice on the part of the aphid, for maples, oaks, and numerous other trees close at hand were avoided.

It was a good flying season for aphids and a careful watch

*Papers from the Maine Agricultural Experiment Station: Entomology, 34.

was kept for about fifteen days during which time this *Pemphigus* was particularly numerous upon the wing. It was found to be seeking the bark of elm (*Ulmus americana*) and red ash (*Fraxinus pennsylvanica* Marsh). On the red ash they were seeking also the ash clusters of a gall mite where they deposited the true sexes as they did in the rough bark. (*Eriophyes fraxiniphila,* Hodgkiss, Me. Agr. Exp. Sta., Bul. 162, p. 367).

In all these situations on the bark of lilac, elm, and ash, and in ash clusters, the minute apterous males and females molted, mated, and the winter eggs were subsequently laid.

On May 13, 1909, the newly hatched aphids were observed to be crawling up the trunks of the lilac, and by May 20 they were found to be numerous on both the lilacs and ash where they had settled in the angles of the twigs or about the swelling buds. They were feeding, growing and excreting honeydew normally on both these hosts. Fine long bluish-white flocculent strands are secreted from six rows of abdominal glands giving the aphids a very downy appearance.

This is the first time in my observations of Pemphigus when I have found the same species chosing widely different hosts *for the same stage.* Whether the stem mothers of *Pemphigus venafuscus* are also able to develop upon the elm it has not yet been possible to ascertain.

The fall migrants of 1908 were on the wing for more than a month but the host plant which they had left was not located.

Reference to my *Pemphigus* records and mounted slides of 1906, however, showed specimens and notes of apterous viviparous, winged viviparous, pupae, and young of the same species which were found upon the twigs of ash June 21-29, 1906, at Orono. They did not occur on the leaves.

By reference to the Maine Station collection and through the kindness of other collectors of this genus I was enabled to compare specimens of this new *Pemphigus* with authentic specimens of thirteen named species of Pemphigus as well as several undescribed species. This comparison emphasized the

fact that *venafuscus* is a very distinctive species. The wings alone would serve to characterize it. Their dark, smoky condition is similar to that commonly found in *Lachnus,* but unusual for *Pemphigus,* and the venation is heavier than any known *Pemphigus.*

Pemphigus venafuscus n. sp.

Apterous viviparous.—Large dark brownish globular forms. Mottled in appearance due to six powdery discs on each abdominal segment, two nearly mid dorsal and a lateral line of two on each side. At time of collection these old forms were pulverulent rather than flocculent over the general body surface but they possessed a flocculent caudal tuft.

Length of antennae, 1.01mm. with segments as follows: I, .06 mm.; II, .15 mm.; III, .23 mm.; IV, .19 mm.; V, .18 mm.; VI, .2 mm. Total length of body exclusive of antennae, 3.5 mm.

Found in sticky, wooly colonies along twigs of ash chiefly on new growth but somewhat on old. Collected at Orono, June 21, 1906, together with minute progeny and pupae nearly ready for the last molt.

Winged viviparous. Pupae collected June 21 on ash twigs were saved in order to obtain the mature alate forms. The pupae were exceedingly flocculent over the whole surface of the abdomen. By June 29 they had molted and begun to produce.

Head, antennae, thorax and legs black. Abdomen greenish black and flocculent. Antennae and wings as in the fall migrants.

Body length, 3 mm. Beak extending over the first third of the abdomen.

Fall migrants. These winged *sexuparae* (form producing the true sexes) were taken on the wing and collected from the trunks of lilac, red ash and elm in October, 1908. At time of collection they resembled the other winged viviparous generation except that they were bluish black rather than greenish black and the abdomens of the migrant *sexuparae* are shrunken in appearance and not plump like the other viviparous forms.

Head, prothorax, and thorax and legs black, flocculent. Antennae black, 1.55 mm. in length with segments as follows: I, .1 mm.; II, .15 mm.; III, .55 mm.; IV, .25mm.; V, .275 mm.; VI, .225 mm. Straight transverse sensoria occur regularly spaced, varying slightly in number but averaging 19 on III, 10 on IV, 11 on V, 4 or 5 on VI., Asensorium, circular in shape, is distinct on distal 11. The usual terminal sensoria on V and VI. Near the base of III there is an irregular jut, the

rest of the segment is fairly even in outline. Wings smoky and dark with dark veins. Wing expanse 9 mm. Wings at rest usually deflexed but more often reposed than in most species.

In general, a blue-black species with blue-white flocculency. The wavy filaments are as long as the body and curl out from the side of the abdomen under the margin of the wings. The wax filaments are silky in appearance and are slightly fluted on some of the specimens. This condition of the filaments is true, of course, only for those individuals which have not become too much travel worn.

Oviparous female. An apterous non-rostrated form, yellow, with semi-transparent smoky white legs and antennae. Body length, 1.15 mm. Antenna, .28 mm. Five distince segments. Terminal sensoria on IV and V. Eyes a group of 3 pigmented areas.

Male. Apterous and non-rostrated. Body greenish with semi-transparent smoky white legs and antennae. Body length, .75 mm. Antenna, 2.75 mm. Five distinct segments. Terminal sensoria on IV and V. Eyes a group of 3 pigmented areas.

Both the male and the female molt once before copulation. A single egg is deposited, yellow and glistening with a downy white secretion. The egg subsequently turns glistening black.

EXPLANATION OF PLATE XVII.

Fig. 1. Oviparous female. On lilac, October, 1908. Actual length of body 1.15 mm.

Fig. 2. Male. On lilac, October, 1908. Actual length of body .74 mm.

Fig. 3. Pupa. On ash, June, 1906. Actual length of body 2.66 mm.

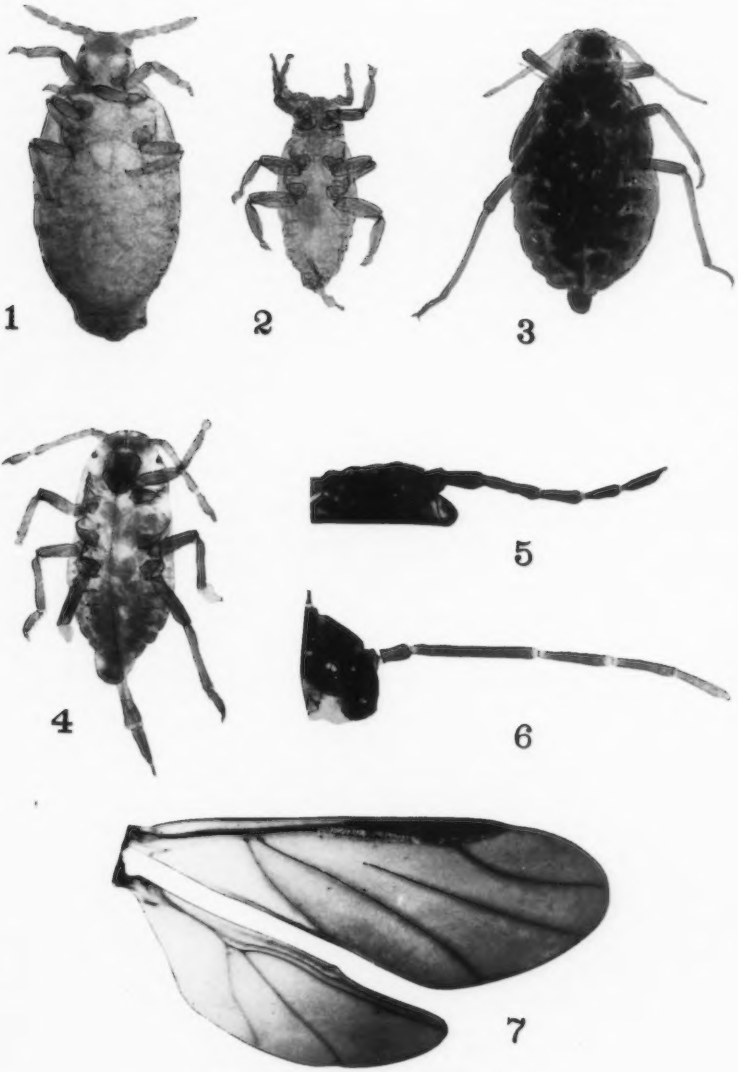
Fig. 4. Stem mother. Very young nymph. Collected from lilac, May, 1909. Actual length of body, exclusive of beak, 1.1 mm.

Fig. 5. Top of head and antenna of apterous viviparous form,—full grown stem mother. Actual length of antenna 1.01 mm.

Fig 6. Top of head and antenna of alate viviparous form, fall migrant. Actual length of antenna 1.55 mm.

Fig. 7. Wings of fall migrant.

Thecla blenina Hew. (siva Edw.).—This beautiful little species has been recorded from Colorado, on the authority of Bruce, but little seems to be known of its occurrence here. It is therefore worth while to report that Mr. Nash took it in Fueblo County many years ago; and I have before me a specimen caught by Mr. S. A. Rohwer at Rifle, July 3, 1908.—T. D. A. COCKERELL.



PEMPHIGUS VENAFUSCUS PATCH.

Notes and Descriptions of Wasps.

By S. A. ROHWER, Boulder, Colo.

Crabro (Hoplocrabro) boulderensis n. sp.

Male.—Length 7 mm.—The middle portion of the clypeus with three small obtuse teeth; outside of the produced portion is a distinct tooth; no middle carina on the clypeus; mandibles bidentate at the apex; front, cheeks, and vertex with distinct, rather small separate punctures; facial basin not bounded above by a distinct carina; a distinct furrow from the anterior ocellus; supraorbital fovea more or less distinct; ocelli in an equilateral triangle; the distance between the lateral ocelli less than the distance between a lateral ocellus and the nearest eye margin; antennæ slender, sparsely clothed with thin white pile; apical joint truncate, the third joint distinctly longer than the fourth. Pronotum subtriangular, each anterior angle raised into an obtuse, rounded, low tooth; the anterior face of the pronotum punctured; the dorsulum and scutellum shining, with some small scattered punctures, the scutellum rounded, slightly impressed. Mesopleuræ shining sparsely punctured; a strong carina from the tegulæ to the pectus, this carina is bent in the middle. Metathorax short, rounded, with a longitudinal carina and a few irregular striæ basely; metanotum and metapleuræ shining, with a few punctures; the posterior face margined below. Legs stout, normal; the posterior tibiæ with flattened spurs. The recurrent nervure received by the cubital cell as far from the apex as the length of the transverse cubitus. Abdomen longer than the head and thorax, finely punctured, the apical segment a little more coarsely so than the preceding. Black, clypeus, a line on the scape in front, two spots on the pronotum, tubercles, postscutellum, a line on the four anterior tibiæ and tarsi exteriorly, and the base of the posterior tibiæ *ivory-white;* tegulæ brownish. Head and thorax clothed with white pile, denser on the pleuræ and the clypeus. Wings dusky, venation black.

Type locality.—Boulder, Colorado. One male found dead on a window sill, March 6, 1909, by S. A. Rohwer.

Very distinct from all other described species.

Rhopalum (Moniaecera Ashm.) **abdominalis** (Fox).

The male of this species is very much like the female. The abdomen is entirely black and, more slender than in the female; length 4 mm. The male may be separated from *asperatus*

(Fox) the only other species of the group *Moniaecera* by the normal apical joint of the antennæ. The male here mentioned was collected in Lee County, Texas, by G. Birkmann. Mr. Birkmann also took two females in Lee County.

Rhopalum lucidum n. sp.

Female.—Length 4.75 mm.—In general much like *R. modestum* and *pedicellatum*. Anterior margin of the clypeus rounded, with a small quadrate tooth in the middle; second antennal joint longer than the third, the fourth longer than the second, the apical longer than the preceding. The head and dorsulum shining, with small scattered punctures; an impressed line from the anterior ocellus; the suture between the dorsulum and the scutellum deep, not foveolated. The metathorax rounded, without an enclosure, a faint line-like furrow in the middle. The first segment of the abdomen longer than the second and the second longer than the third; the pygidium strongly margined, narrower apically. Shining black; scape, mandibles, part of the tubercles and tegulæ *yellow;* base of the second dorsal segment, the venter more or less, and the pygidium testaceous. Legs: four anterior legs except the base of the coxæ, and a spot on the intermediate femora yellow; part of the posterior coxæ and the base of the posterior tibiæ yellow; the rest of the legs black. Wings hyaline iridescent; the venation brown.

Type locality.—Harrisburg, Pa. One female collected by P. R. Myers, July 25, 1908.

The following table will separate the females of the group *Rhopalum* in the restricted sense (= group *pedicellatus* of Fox):

Clypeus with a small rounded tooth in the middle, no tooth at the side; the base of the second abdominal segment testaceous. **lucidum** Roh.

Clypeus acutely produced and with a small lateral tooth . . . . . 1.

1. Coxae pale; middle segment with an enclosure . . **pedicellatum** Pack.
Coxae black; middle segment without an enclosure . .**modestum** Roh.

Mimesa myersiana n. sp.

Female.—Length 7-9 mm.—Anterior margin of the clypeus produced in the middle into a bidentate tooth. The front with rather close medium size punctures; head behind the ocelli and the cheeks shining, polished, almost impunctate; two crescent-shaped furrows connecting the two lateral ocelli; sometimes there is a short furrow from each lat-

eral ocellus; there is usually an impressed line from the anterior ocellus backward to the crescent-shaped line; from the anterior ocellus to between the bases of the antennæ is a line like carina, which is more distinct between the antennæ. The antennæ thicken toward the apex; the third joint is longer than the fourth, but is not as long as the fourth and fifth combined. Dorsulum punctured, in some places the punctures are confluent giving it a striated appearance; the central portion of the scutellum shining, polished, with a few scattered punctures; the sutures bounding the scutellum are deep, the one between the dorsulum and the scutellum foveolate; mesopleuræ shining with some scattered punctures; the enclosure of the metathorax clearly defined, longitudinally striate, the diamond-shaped fovea with some rugæ, posterior face punctured; metapleuræ shining. The second cubital cell slightly narrowed above; the second recurrent nervure interstitial or nearly so with the second transverse cubitus. The petiole of the abdomen about the same length as the hind trochanters and femora, slightly thickened toward the apex, sub-convex above with two more or less distinct longitudinal sulci. Pygidium long shining, with a few large punctures, surrounded by a strong carina. Color black; the apical joints of the palpi and the tarsi testaceous (in some specimens brownish); the face below the antennæ with dense silvery pubescence; thorax with a few scattered hairs; the base of the hind tibiæ with a bunch of silvery hairs. Wings clear, glassy, hyaline, iridescent; venation pale brown, stigma dark or pale brown.

Male.—Length 7 to 7.5 mm.—Anterior margin of the clypeus gently rounded, not emarginate. Antennæ somewhat moniliform, but not strongly so. Petiole rather longer than in the female. The apex of the abdomen has a curved spine. In general the male is like the female but the sculpture is somewhat coarser.

Type locality.—Wetzel's Swamp, near Harrisburg, Pa. Many cocoons collected by P. R. Myers, September 28, 1908; the adults hatching in January and February, 1909.

In the bidentate clypeus of the female this species is related to *barthi* Vier.; but the wings are clear hyaline, the scutellum is only sparsely punctured, and there are no steel-blue reflections from the thorax. It is also related to *simplicicornis* Fox, but the female has the clypeus different, and the pygidium surrounded by a strong carina. The male has the front more finely punctured than the male of *simplicicornis,* which is very closely allied, and the antennæ are somewhat moniliform.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., JULY, 1909.

This journal has reached its limit of pages and illustrations at the present subscription price. In 1890 we published one hundred and sixty-eight pages and a few text cuts. During 1908 we published five hundred pages, twenty-five full plates and thirty-six text figures. There has been no change in the price of the NEWS during the period mentioned, but if we conclude to increase the number of pages and illustrations, an increase in the subscription price is imperative. Owing to our knowledge of the difficulty of collecting one dollar for the NEWS we are loath to increase the price. It is astonishing to see how many persons are willing to have it for nothing, and even refuse to return the copies for which they have not paid. We judge from this that it must be some good. It is the appreciation of the few that encourages us to continue what has been a labor of love for the last twenty years.

MR. C. GORDON HEWIT, of Manchester, England, has been appointed Entomologist to the Dominion Experimental Farms at Ottawa. He succeeds the late Dr. James Fletcher.

C. F. ADAMS has been promoted to the Dean and Directorship of the College of Agriculture and the Agricultural Experiment Station in the University of Arkansas. He has been Acting Director of the Experiment Station since the fifth of last November. He will continue in the Chair of Entomology, with the assistance of Mr. Paul Hayhurst of Harvard.

OUR INSECT FRIENDS AND ENEMIES, THE RELATION OF INSECTS TO MAN, TO OTHER ANIMALS, TO ONE ANOTHER, AND TO PLANTS, WITH A CHAPTER ON THE WAR AGAINST INSECTS. By John B. Smith, Sc. D. J. B. Lippincott Company, Philadelphia and London.—This is an excellent work by a well known authority and will be of great value to those persons who wish to have a guide to all the varied interests attached to insect life. A good idea of the scope of the work may be obtained from the contents as follows:—

Insects in their relation to the animal kingdom; Insects in their relation to plants as benefactors; In their relation to each other; In their relation to the animals that feed on them; In their relation to weather and diseases that affect them; In their relation to other animals; In their relation to man as benefactors; In their relation to man as carriers of disease; Insects in their relation to the household; In their relation to the farmer and fruit-grower; The war on insects.

There is one plate in color and 121 text figures. We heartily recommend this book as one that will surely create an interest in those who read it, for this fascinating study.

Doings of Societies.

The Entomological Society of Western Pennsylvania held its regular monthly meeting in Carnegie Museum, Pittsburg, Pa., Monday evening, May 3, 1909, President W. J. Holland presiding. Eleven members present. Director Holland exhibited a collection of Cossidae and Hepialidae from Australia, most all very rare species, some of which have just recently been described.

Mr. Robert Dickson exhibited a very interesting collection of blown larvae of the wood-boring moths, all mounted in their natural food burrows. Among these were *Prionoxystus robiniae,* in locust, *Sanninoidea exitiosa,* in peach, *Sesia acerni* in swamp maple, *Sesia pyri,* in apple, and *Sesia pictipes,* in wild cherry, also larvae of the clothes moth *Tineola bisselliella* mounted in a piece of cloth.

Mr. Henry Engel exhibited a lot of *Arctia virgo* larvae, which he has been feeding on lettuce on and off since last August. Mr. Engel also stated that he had observed a larvae similar to *Gortyna* feeding in *Rumex obtusifolius.* No one present knew what it was.

F. W. FRIDAY, *Secretary.*

The Entomological Society, of Western Pennsylvania, held its regular monthly meeting in Carnegie Museum, Pittsburg, Pa., Monday evening, June 7, 1909, President W. J. Holland presiding. Ten members present. A motion was passed to accept the membership as a whole of the Allegheny Naturalist Club. A committee, consisting of Messrs. Engel, Friday and Overbeck, were appointed to select a desirable locality for the Society to hold its annual field day.

Mr. Engel stated that the larvae feeding in *Rumex obtusifolius* turned out to be *Hadena passer*. The first moth emerging June 1st.

Mr. Robert Dickson exhibited some of his fine work in blown larvae and perfect imago of *Exartoma ferriferanum* Walk., bred in stems of *Hydrangae americana, Olethreutes albiciliana* Fernald., bred in stems of water weed (*Impassians bicolara*), also larvae and cocoon of *Melittia macmurtrei* Guer. bred in oak. The members then adjourned to Hotel Schenly, under escort of Director W. J. Holland, where the sociability of the Society was further continued.

F. W. FRIDAY, *Secretary.*

At a regular meeting of the Feldman Collecting Social, held April 21st, 1909, at 1523 S. 13th Street, Philadelphia, fifteen members were present. President Harbeck in the chair.

Mr. Daecke said collecting is very good so far in the vicinity of Harrisburg. *Cychrus viduus* Dej. and *stenostomus* Web. have been taken and the spring form of *Papilio ajax* Linn. was common April 18th and was also taken on the 11th. Another species seen was *Anthocharis genutia Fabr.* He also spoke on collecting of Coleoptera by Mr. Champlain at night with lantern which led to discussion on merits of certain lamps. Upon Mr. Daecke mentioning the rare *Clerus* caught in this manner Mr. Wenzel said they were undoubtedly on the trees after species of Scolytidae and if the trees were not infested with this group this year the *Clerus* will most likely have disappeared.

Mr. Viereck said he could corroborate Mr. Daecke's statement on this interesting locality and reported the capture of a bee there, *Bombus ternarius* Say, which record was the southern limit of this species and of a wasp, *Pepsis elegans* St. Farg., which was the farthest north this species has been found. He said Harrisburg seems to be a conjunction of the Alleghenian and Carolinian zones and has evidences of the overlapping of the Canadian and the Austroriparian with the former two.

Mr. Wenzel commented on Fall's recent paper on American *Diplotaxis* which includes 95 species of which 50 occur in New Mexico and Arizona, only 3 in Ontario, 5 in all the New England States and 9 from Pennsylvania and New Jersey. Upon inquiry as to whether this group was determined in the same manner as the *Lachnosterna* Mr. Wenzel read from the paper, "The male genitalia are quite simple so far as examined while in the female they are entirely membranous and therefore useless for comparison."

Mr. C. T. Greene exhibited two flies one of which, *Phornia regina* Meigen, had been attacked by a fungus which made a complete line around the abdomen at the joints of the segments giving this blue fly the appearance of having yellow bands or stripes and the other, *Pollemia rudis* Fab., a freak in which the second abdominal segment does not extend the full width.

Mr. Harbeck said he had taken about 140 specimens of *Andrena*, about 6 species, on willow blossoms in a short time at Glenside, April 17th and could have taken a thousand if he had so desired. Adjourned to the annex.

GEO. M. GREENE, *Secretary*.

At a regular meeting of the Feldman Collecting Social, held May 19th, 1909, at 1523 S. 13th Street, Philadelphia, twelve members were present. President Harbeck in the chair.

Mr. C. T. Greene exhibited the following Diptera: *Aeshnasoma rivertonensis* Johnson, ♂ and ♀, collected at Riverton

July 12, 1908, a species described from the ♂ only; *Baccha cognata* Loew, Roxborough, May 8, 1909, and *Brachyopa vacua* O. S. Roxborough, May 8, 1909, the second Pennsylvania record, the first being Collingdale, May 7, 1897.

Mr. Daecke reported that Mr. Champlain and himself had bred from a dead hickory limb, from Lemoyne, Pa. (opposite Harrisburg), a species of Dipterous parasite and the following Coleoptera: *Neoclytus erythrocephalus* Fabr., *Scolytus muticus* Say, *Liopus variegatus* Hald., *Phyllobaenus dislocatus* Say, and *Agrilus egenus* Gory.

Mr. Harbeck recorded *Brachypalpus rileyi* Will. at Clementon, N. J., May 2, 1909.

Mr. Geo. M. Greene recorded a species of Diptera, *Tachydromia fenestrata* Say and a beetle, *Melasis pectinicornis* Welsh, collected on a dead tree at Clementon, N. J., May 2, 1909, and a specimen of *Stenosphenus notatus* Oliv., collected at Castle Rock, Pa., May 9, 1909, by C. W. Fenninger.

Mr. Wenzel exhibited a lamp with various improvements for collecting Coleoptera at night.

GEO. M. GREENE, *Secretary.*

The 29th regular quarterly meeting of the Pacific Coast Entomological Society was held on the evening of August 22nd, 1908, at the Café Bismarck, President Van Dyke in the chair. Twelve members and six guests were present. Mr. Walter Topp and W. H. Lange were elected to membership. The annual election of officers resulted in the same officers being re-elected.

Mr. Chas. Fuchs reported his trip east and made remarks upon *Thelydrias contractus* Motsch. (*Ignotus aenigmaticus*), with exhibition of specimens in the three stages of development.

Mr. J. C. Huguenin reported his summer's outing, and exhibited a box of Lepidoptera and one of Coleoptera; among the latter were a pair of *Purpuricenus dimidiatus* Lec., with red elytra, the tips of which were black, they were beaten from *Eriodyction glutinosum.*

Mr. Edw. Ehrhorn reported the results of a collecting trip to the Yosemite Valley, and exhibited a specimen of *Carabus vietinghovii,* taken in June at Rampart, Alaska.

J. C. Bradley entertained the members with an interesting account of his summer's work.

G. R. Pilate made remarks on collecting in the hills about Mills Seminary, Alameda Co., Calif., and exhibited several boxes of Lepidoptera.

F. X. Williams reported a trip to Carmel, Monterey Co., Calif. He exhibited specimens of *Sesia polygoni* that were raised from the stems of *Polygonum paronycha; Cydia cupressana,* very injurious to young cypress; *Euchaetias oregonensis* from Shasta Co., Calif., and a species of *Merolonche.*

Mr. Ehrhorn urged the members of the Society to assist in adopting uniform names for insects and that a committee of five be appointed to take up the work, that the President be one of the committee. It was made a motion and carried.

President Van Dyke then appointed the following four members: Prof. Vernon Kellogg, Prof. C. W. Woodworth, Edw. Ehrhorn and J. E. Cottle.

Mr. Ehrhorn drew attention to the Argentine ant, stating that it had been found in Oakland and San Francisco and were very destructive. The species was determined by Pergande. Percy Baumberger exhibited specimens.

A communication from L. E. Ricksecker was read, in which was given a list of the Lepidoptera taken about San Diego.

Miss Julia Wright exhibited a box of Lepidoptera from Ceylon. Adjournment.

F. E. BLAISDELL, SR., *Secretary.*

The 30th regular meeting of the Pacific Coast Ent. Society was held on the evening of November 21st, 1908, at the Hotel Manx.

President Van Dyke in the chair. Thirteen members were present and three guests.

Mr. J. E. Cottle reported his collecting trip to San Diego and exhibited a large series of *Hemileuca electra* taken at that place. He observed that the males fly early and the females about 2 o'clock, to deposit their eggs upon the wild buckwheat (*Eriogonum*).

Edw. Ehrhorn gave a talk on Horticultural Quarantine against insect pests. He mentioned that the live oak pest, *Phryganidia californica,* was extending its ravages to the Acacia trees, and it was constantly spreading. Some consider it introduced, others consider it native.

Dr. Van Dyke stated that the spread is probably due to the small birds being killed or driven off by boys. In the Golden Gate Park the birds are protected and the parasites few; just beyond the park limits the trees are denuded.

Dr. Blaisdell stated that he had taken the pest 30 years ago at Poway, San Diego Co., Calif. It was not common on the live oak.

Dr. Carroll Fox gave a very instructive talk on the campaign against fleas in San Francisco. He advised members when collecting to keep the specimens from the different animals separate and with the proper data, and to preserve them in 70 per cent. alcohol. Dr. Fox is depositing a series of named specimens in the California Academy of Sciences.

Other members made exhibits. Adjournment.

F. E. BLAISDELL, SR., *Secretary.*

The 31st regular quarterly meeting of the Pacific Coast Ent. Society was held on the evening of February 27th, 1909, at Thompson's Café, San Francisco.

Dr. Van Dyke in the chair. Fourteen members and six guests were present.

Dr. Carroll Fox, L. R. Reynolds and Maurice B. Mitzmain were elected to membership.

Mr. F. W. Nunenmacher read an epitome of the progress of the study of the Coccinelidae. Stating as a grand total that 2,028 species, 192 genera and 85 varieties were known, and

that it took a hundred and twenty-nine authors to describe them.

Mr. J. G. Grundel repored a recent trip to the Tahiti Islands. He took a few Coleoptera and Lepidoptera. Among the Coccinelidae brought back were a number of specimens of *Coccinella abdominalis*. He reported a small ant as very destructive to other insects; while 550 species of native plants constituted the native flora, there are now over 2,000 species; the cocoanut weevil is very injurious there, scales (*Coccidae*) very abundant on plants around the settlements, especially on the imported plants. In the dense forests very little was found, an occasional moth or *Satyrus?*

Mr. L. R. Reynolds stated that exhaustive collecting was a good idea as the native fauna of most islands was rapidly being destroyed or obscured by the introduction of other species.

Dr. Carroll Fox stated that species of Sarcopsyllidae were parasitic on the fleas. That he found six of these mite-like organisms upon one flea; they are so microscopic that 20 or 30 could easily get on a single individual.

Dr. Van Dyke stated that the early stages were found in rats' nests, that they run over the ground in the larva stage and finally get on their hosts.

Dr. F. E. Blaisdell reported that his monograph on the Eleodiini of the United States would soon be issued as Bulletin No. 63 of the U. S. National Museum. It is a work of 519 pages, 13 plates and 8 text figures, and had been eight years in preparation. Many exhibits were examined and discussed.

F. E. BLAISDELL, SR., *Secretary.*

A meeting of the Rhode Island Entomological Society was held in the offices of the Providence Forestry Company Monday, February 22nd, at 8 o'clock, nine members being present. After the minutes had been read and approved, a check-list of the Lepidoptera of Rhode Island was started and earliest and latest data taken. It was voted that the list be kept in card catalogue form and a catalogue cabinet was ordered.

Mr. Eddy exhibited some Coleoptera.

Mr. Pears a ♀ *Junonia coenia* taken at Riverside, R. I., and Mr. Place some specimens of *Psycomorpha epimenis* which he had just bred, the moths coming out in February.

After a general discussion the meeting adjourned.

WILLIAM PLACE, JR., *Secretary.*

A meeting of the R. I. Entomological Society was held in the office of the Providence Forestry Company on Monday, March 8th, at 8 P. M., 11 members and one visitors being present.

After the minutes had been read and approved two new members were admitted to the society; Mr. Joseph Bridgham and Mr. H. A. Cash.

Mr. Reynolds then exhibited the nest of a trap door spider and Mr. Kingsford exhibited a petrified snail.

After a slight review of the card catalogue and a social talk, the meeting adjourned.

WILLIAM PLACE, JR., *Secretary.*

A meeting of the R. I. Entomological Society was held in the offices of the Providence Forestry Co., March 22, at 8 P. M., ten members being present. After the minutes had been read and approved Mr. Bridgham exhibited some rare lepidoptera including *Palilio homerus.* Particular mention might be made of the *promethia* which he exhibited. Three of the wings although streaked and mottled in an unusual manner, were distinctly ♀ while the fourth was distinctly ♂.

Mr. Billson then exhibited some native Lepidoptera, which were viewed with much interest.

Mr. H. Anderson was then admitted to membership.

It was requested that all members bring a list of Splingidae and Bombycidae for the card catalogue at the next meeting.

After a brief talk the meeting adjourned.

WILLIAM PLACE, JR., *Secretary.*

A regular meeting of the Entomological Section of the Chicago Academy of Sciences was held March 18th at the John Crerar Library. Eight members present. Messrs. Neubarth, Beer, Liljeblad and Kwiat exhibited their collections of *Plusia* and allied genera and compared notes. Local captures were reported as follows:

Xanthopastis timais (Kwiat, 1)
Euthisanotia unio
" *grata*
Plagiomimicus pityochromus
Stibadium spumosum (Healy. 1)
Cirrhophanus triangulifer
Basilodes pepita (Healy, 1)
Plusiodonta compressipalpis
Calpe canadensis
Panchrysia purpurigera
Plusia aerea
Plusia balluca
Euchalcia venusta (Neubarth,1; Beer, 1)
" *contexta*
" *putnami*
Autographa biloba
" *pseudogamma*
Autographa verruca
" *precationis*
" *brassicae*
" *oxygramma*
" *rectangula*
" *alias*
" *octoscripta*
" *selecta* (Liljeblad, 1) (Healy,1)
" *ampla* (Neubrath, 1)
" *falcifera*
" *basigera* (Kwiat, 1)
Abrostola ovolis (Liljeblad, 1)
Ogdoconta cinerola
Marasmalus inficita
Amyna orbica
Aletia argillacea
Anomis erosa

Among the Coleopterists, Mr. Wolcott exhibited specimens of *Phytonomus castor,* Lec. and the curious transparent web-like cases formed by the larvae in which the transformation to adult takes place. He called attention to the recently published paper on the distribution of the North American species of his genus by R. L. Webster (ENT. NEWS, February, 1909), in which it is stated that "with Leconte's original description of *Phytonomus castor,* Canada is given as a locality for its occurrence. No other records of the species were found." The specimens exhibited were taken by Mr. Kwiat as larvae on a species of ground pea at Palos Park, Ill., May 30, 1907, and transformed to adult June 28, 1907. The species was determined by Dr. H. C. Fall.

Mr. Wolcott further stated that the *Haliplus nitens* shown

at the January meeting of the Section and recorded in the March number of ENT. NEWS was erroneously determined and proved to be *Haliplus subguttatus*, Lec. MS.

ALEX KWIAT, *Recorder.*

The Brooklyn Entomological Society met at 55 Stuyvesant Avenue, April 1st, nineteen members and three visitors present. Dr. F. E. Lutz, of the American Museum of Natural History, was elected an active member.

John A. Grossbeck gave an illustrated talk on the Classification of the Lepidoptera as based on the Wing Venation. He used and advocated the Comstock-Needham system of nomenclature. The policy of the Society in devoting considerable time to illustrated lectures on fundamental principles, adopted this year, has already been proven a decided success. The average attendance is larger by over a third and scientific discussion more prolonged. It is a remarkable and unexpected fact that the increased attendance for the sake of the instructive lecture comes mainly from veterans who already possess doctors' or masters' degrees. Accessions from the ranks of beginners are mainly for the sake of the weekly field trips.

Dr. Lutz exhibited drawings of the wings of a common fruit fly which he has bred for ten generations. In the wild state the wing shows a considerable tendency to aberration in venation. This has been vastly multiplied by artificial selection. The later generations show striking examples of lack of bilateral symmetry in variation.

Mr. Engelhardt exhibited a large series of *Utetheisa*, collect from Canada and Guatemala, including the West Indies. The series radiated from a form of *bella* intergrading in one line to the typical *ornatrix*, and in another to the typical *pulchella* of Europe. *Bella* is very common in Porto Rico and Jamaica. The typical *ornatrix* were mostly from Texas. Apparently the evolution into district species is comparatively very recent.

R. P. DOW, *Recording Secretary.*

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